

99P 1576

(4) 38

(12) **UK Patent Application** (19) **GB** (11) **2 327 172** (13) **A**

(43) Date of A Publication 13.01.1999

(21) Application No 9713127.0

(22) Date of Filing 20.06.1997

(71) Applicant(s)

Hong Kong Telecommunications Limited
(Incorporated in Hong Kong)
Hong Kong Telecom Tower, 979 Kings Road,
Quarry Bay, Hong Kong

(72) Inventor(s)

David Connolly

(74) Agent and/or Address for Service

Marks & Clerk
57-60 Lincoln's Inn Fields, LONDON, WC2A 3LS,
United Kingdom

(51) INT CL⁶**H04M 3/50**

(52) UK CL (Edition Q)

H4K KF50C

(56) Documents Cited

GB 2287609 A GB 1099976 A GB 1092564 A
US 5384832 A

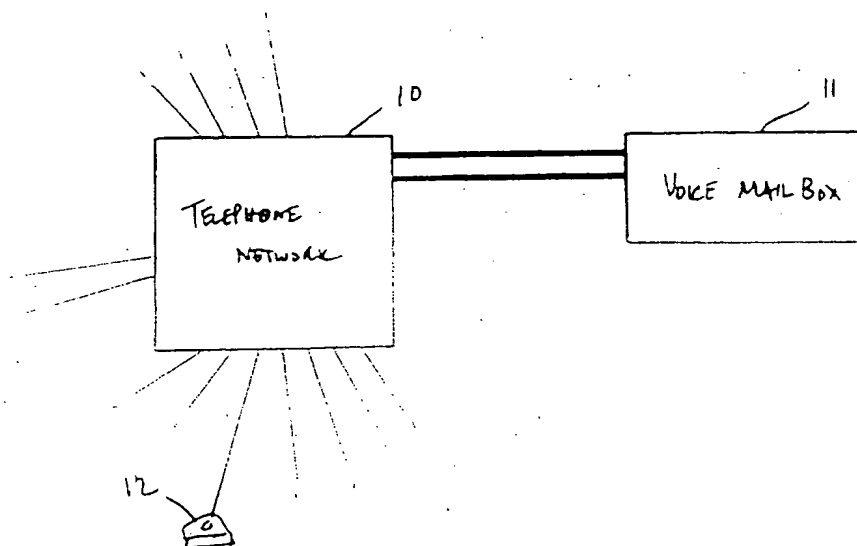
(58) Field of Search

UK CL (Edition P) H4K KF50C
INT CL⁶ H04M 3/50
ONLINE - JAPIO, WPI

(54) Abstract Title

Voice mail service with automatic message delivery

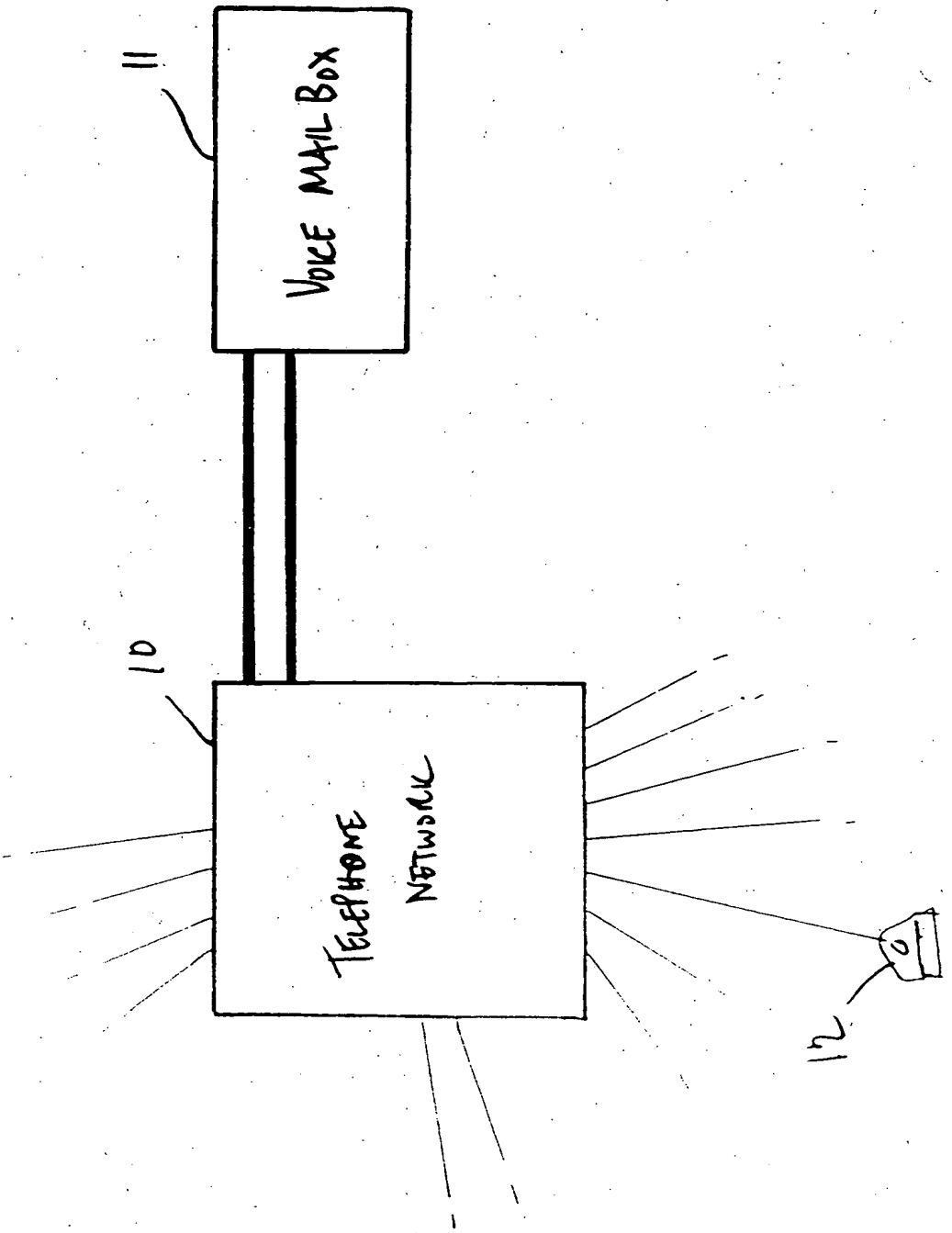
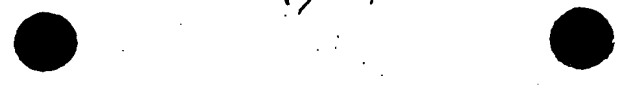
(57) In a voice mail service for a fixed telephone network, voice mail delivery from a voice mail box 11 to a telephone 12 is initiated automatically by a signal generated when the telephone 12 goes "on-hook". This signal indicates that the fixed telephone 12 is being attended. Automatic voice mail delivery may be initiated after a few seconds delay to allow a telephone user to initiate a normal "follow on" call within the delay period, in which case voice mail delivery is suspended. A subscriber wishing to check his voice mail merely has to lift then replace his telephone receiver to provide the going "on-hook" condition which initiates voice mail delivery.



BEST AVAILABLE COPY

GB 2 327 172 A

11



VOICE MAIL SERVICE

The invention relates to voice mail services.

Voice mail services are used in both fixed and mobile telephone networks to provide automatic answering of calls to customers whose lines or phones do not answer, or alternatively divert calls when the phone is in use. The voice mail system is provided for the fixed or mobile network and messages are stored until such time as the customer retrieves them.

A major aspect of a present voice mail services is alerting the customer that a message is stored in the network pending retrieval. One method of providing the message alert to the customer is to provide a lamp or other indication on the telephone, which informs the user when messages are waiting to be retrieved. This method is popular for telephones with a "message waiting indicator", but a majority of telephones in fixed networks do not have this feature and consequently a visual message alert indication cannot be provided. An alternative is to provide "stutter" dial tone to the fixed network telephones so that when the user lifts the handset a special dialling tone indicates that a message is waiting. However, this method in practice causes some difficulty for users because "stutter" dial tone is also used for features other than message waiting.

One message alert technique which has become popular in mobile networks is to provide automatic delivery of messages to the customer when the telephone is switched on or moves from "out-of-coverage" to an "in-coverage" area. In both such cases, the mobile network is automatically aware of the change of status of the telephone, and can initiate a call to the mobile customer as soon as the service is restored. However this method is unsuitable for fixed networks in which service is continuous and there are no conditions equivalent to the "out-of coverage" or "phone-off" conditions in mobile networks.

An additional benefit of the automatic delivery technique presently used in mobile networks is that the user does not have to remember a dialling code for message retrieval, at least for retrieval on his own phone. This feature further simplifies the use of voice mail service but is also unavailable on fixed networks.

It is an object of the invention to provide the advantages of automatic message delivery for voice mail in fixed networks.

According to the invention there is provided a voice mail service for telephones in a fixed network in which a voice mail delivery is initiated automatically by a signal generated when a telephone goes "on-hook".

The automatic voice mail delivery is preferably initiated after a few seconds delay to allow a telephone user to initiate a normal "follow on" call within the delay period, in which case voice mail delivery is suspended.

5 The voice mail service may be arranged to transfer a signal to a local exchange when an un-retrieved signal message is stored in the voice mail service for any telephone, in which the telephone network provides a signal to the voice mail service when that telephone goes
10 "on-hook".

The "on-hook" condition may be identified by each completion of an active call on each telephone, and the voice mail service arranged to determine the presence of and send if present any stored voice mail to that
15 telephone.

Voice mail services according to the invention will now be described with reference to the accompanying schematic drawing which shows a fixed telephone network and a voice
20 mail box.

The operation and components of fixed telephone networks and voice mail boxes are already well-known and, as mentioned above, the configuration of voice mail services for mobile phones are well established for such
25 arrangements. Embodiments of the present invention

relate specifically to using known technology and equipment to provide voice mail services for fixed telephones without requiring to re-design or alter the fixed telephones themselves. To this end, the
5 embodiments rely on responding to the actual presence of a user at his telephone and his availability to receive his voice mail.

In the embodiments, a fixed telephone network 10 is connected to a number of telephones 11 in conventional
10 manner. A voice mail box 12 serves the network 10 for storing voice mail for each respective telephone connected to the network. Voice mail is stored in conventional manner together with an appropriate called line identifier. The voice mail is stored either when a
15 line is unanswered, or when incoming calls are diverted because the line is busy, or when diverted by the customer on his instruction (e.g. when absent for long periods). When the voice mail retrieval is initiated, a call is made to an appropriate line (i.e. telephone) to
20 announce a voice mail message is stored and awaiting retrieval together with instructions for retrieval by the user or customer, using keypad operation or voice commands.

In one embodiment of the invention, the voice mail system
25 is controlled as follows :-

1. A message is deposited in the voice mail box, to await retrieval.
2. The voice mail box notifies the telephone network that a message is waiting for a particular telephone line (according to its called line identifier).
3. The network monitors the status of that line.
4. The network notifies the mail box that the telephone has gone "on-hook".
5. The mail box initiates a call to the line for delivery of the stored messages.

It is preferable that a delay of a few seconds is provided between the "on-hook" condition being detected and the voice mail call, to allow the user to use his telephone for any normal calls, in which case delivery of the voice message is suppressed. In this way, the user's choice or freedom to use the telephone for another call immediately, after replacing the handset, is not interfered with.

In a second embodiment, the voice mail system is controlled as follows :-

1. The telephone network monitors the status of each

telephone and provides a signal to the mail box whenever any of the telephones goes "on-hook" and provides the called line identifier.

5 2. The voice mail box checks if any message is awaiting the respective line.

3. The mail box may advise the telephone network if there is no message awaiting retrieval.

10 4. If a message is awaiting retrieval, the voice mail box initiates a call to the line to deliver the message.

As before a short time delay may be introduced to allow the user to make a normal call on the line, and the delivery of the message is then suppressed.

15 It will be appreciated that in the embodiments, as the voice mail service is initiated by monitoring and respond to an "on-hook" event, a suitable signal is provided to indicate that the fixed telephone is being attended, that is, that a user is available to receive any messages. The preferred delay allows the user to make normal calls
20 without first dealing with any messages. An "off-hook" dependent response would also indicate the presence of a user at the fixed telephone but using such signals could interfere with normal operation when receiving calls for

example. In embodiments of the invention, a user wishing to check his voice mail has to merely lift and then replace his telephone receiver to provide the "on-hook" condition to initiate the voice mail service.

CLAIMS

1. A voice mail service for telephones in a fixed network in which a voice mail delivery is initiated automatically by a signal generated when a telephone goes
5 "on-hook".

2. A voice mail service according to claim 1, in which the automatic voice mail delivery is initiated after a few seconds delay to allow a telephone user to initiate a normal "follow on" call within the delay period, in
10 which case voice mail delivery is suspended.

3. A voice mail service according to claim 1 or 2, in which the voice mail service is arranged to transfer a signal to a local exchange when an un-retrieved signal message is stored in the voice mail service for any
15 telephone, in which the telephone network provides a signal to the voice mail service when that telephone goes "on-hook".

4. A voice mail service according to claim 1 or 2, in which the "on-hook" condition is identified by each
20 completion of an active call on each telephone, and the voice mail service is arranged to determine the presence of and send if present any stored voice mail to that telephone.

5. Voice mail services substantially as herein described with reference to the drawing.



Application No: GB 9713127.0
Claims searched: 1 to 5

Examiner: M J Billing
Date of search: 30 October 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): H4K KF50C.

Int Cl (Ed.6): H04M 3/50.

Other: ONLINE - JAPIO, WPI.

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB2287609A (MITEL) - page 2 lines 21-32	1
A	GB1099976 (INTERNATIONAL STANDARD ELECTRIC) - page 1 lines 13-57	1
X	GB1092564 (ERICSSON) - page 3 line 124 to page 4 line 40	1 at least
X	US5384832 (COMMSTAR) - Figs.3,5; column 6 line 64 to column 7 line 45	1,2 at least

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☒ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER: _____**

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

THIS PAGE BLANK (USPTO)